

Full Life-Cycle for DO-178B Level A System



A Fortune 500 aerospace company needed assistance to design and develop the ARINC 429 communications interface and ARINC 739A protocol system associated with the Secondary Power Distribution Assembly (SPDA). The SPDA distributes, controls, and protects electrical power using solid-state power controllers in an aircraft.

The ARINC 429 standard specifies the serial communication protocol between aircraft embedded systems, enabling systems designed by different manufacturers to communicate with each other. ARINC 739A is a characteristic specification for the interface with the Multipurpose Control and Display Unit (MCDU).

With internal staff focused on design for the larger system, the company needed a certification-experienced partner to design, develop, and test the two communications protocols. They turned to Esterline Control Systems - AVISTA because of its depth and breadth of experience in [safety-critical embedded software systems](#) that must meet the most [stringent of DO-178B requirements](#).

Working with the client's internal software and hardware teams, the AVISTA team developed the communications software in the C language. Following the development phase, the team also worked closely with the client to integrate and perform complete verification testing for the system. The SPDA software was certified to DO-178B, Level A, and met ARINC 429 and ARINC 739A standards for the SPDA and the MCDU.

Fast Facts

Company: Provider of tip to tail aircraft systems

Industry: [Aerospace](#)

Geography: United States

Project: [Full life-cycle software](#) development

Certification: DO-178B, Level A

Challenge: Creation of communication software for several embedded systems on the aircraft

Solution: The AVISTA services program management and software development experts handled requirements, design, development, and systems-level verification

Results: A DO-178B system, using ARINC 429 for communications and ARINC 739A for the control and display unit, certified to the most critical level



Esterline Control Systems - AVISTA Success Factors

In collaboration with the client, the AVISTA team brought the following strengths to the project:

- **Expert knowledge of the requirements for [DO-178B certification](#).** The client chose AVISTA services for the expert knowledge in DO-178B certification of safety-critical embedded software applications.
- **Full life-cycle software experience.** The AVISTA team's experience with avionics projects provided the depth and breadth of programming knowledge for cost effective design, development and verification of DO-178B compliant software.
- **Regular communication.** One of the AVISTA services hallmarks is proactive and ongoing communications with the client. In addition to the regular formal status meetings with the AVISTA team, the client regularly participated in software reviews by phone. There was also plenty of face-to-face interaction, including program management reviews onsite at Esterline Control Systems – AVISTA, and AVISTA team visits to the client's site to interface with the project team and use their lab facilities.

“AVISTA's face-to-face interaction with our engineers was critical to the success of the project.”

- **Expertise in ARINC systems.** The team offered extensive experience in designing, implementing, and testing ARINC systems to ensure smooth project completion for the client.
- **Commitment to long-term partnerships.** Typical of Esterline Control Systems - AVISTA's long-term partnerships, the experience gained on this project has been leveraged by the team in other development projects for the client.

For more information about
AVISTA Services, visit
www.esterline.com/controlsystems/avista

Esterline Control Systems
1575 East Business Highway 151
PO Box 636
Platteville, WI 53818-0636
608-348-8815
avista@esterline.com

